

Developmental Factors in the Treatment of Adolescents

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Most empirically supported interventions for adolescent mental health problems are either downward adaptations of adult treatments or upward adaptations of child treatments. Although these treatments show respectable effects with teens, a review of the outcome research reveals significant gaps, both in coverage of adolescent conditions and problems (e.g., eating disorders, suicidality) and in attention to the biological, psychological, and social dimensions of adolescent development. The authors critique the field, propose a biopsychosocial framework for the development of dysfunction and intervention, and discuss ways the developmental literature can and cannot inform intervention and research. A long-term goal is an array of developmentally tailored treatments that are effective with clinically referred teens and an enriched understanding of when, how, and why the treatments work.

Adolescence is a time of transformation—biological, psychological, and social—and thus of enormous opportunity. But it is also a time of heightened risk and dysfunction in many forms. Both developmental research and youth treatment research focus on challenges young people face, risk and protective factors that undermine or enhance their response to the challenges, and experiences that can return them to a healthy developmental path after significant disruption. The aims of developmental research tend to be more descriptive and the aims of treatment research more prescriptive, but these aims are potentially complementary.

Despite this potential, developmental research and clinical research with adolescents have traditionally been rather distinct, insular enterprises (Weisz, 1997; Weisz, Huey, & Weersing, 1998). Concern has arisen that child and adolescent clinical research is often adevelopmental (e.g., Holmbeck et al., 2000; Holmbeck & Updegrave, 1995; L. Peterson & Tremblay, 1999; Toth & Cicchetti, 1999; Weisz, 1997). In this article, we address that concern with particular attention to treatment of adolescents. We consider (a) whether research to date has produced treatments that work with adolescents; (b) whether there are gaps in the coverage of adolescents and their clinical problems; (c) to what extent developmentally significant biological, psychological, and social issues of adolescence are addressed in treatment research; and (d) how developmental findings can (and cannot) be incorporated into

adolescent treatment and treatment research in the future. We emphasize psychosocial treatments; we touch on pharmacotherapy only briefly.

Has Research Produced Treatments That Work With Adolescents?

Considerable evidence indicates that treatments emerging from the research process to date do produce substantial benefit for adolescents (see, e.g., Kazdin, Bass, Ayers, & Rodgers, 1990; Weisz, Weiss, Han, Granger, & Morton, 1995; Weisz, Weiss, Alicke, & Klotz, 1987).

Meta-Analytic Findings

Two meta-analyses of treatment outcome research have assessed treatment effects for adolescents separately from children, across a broad range of treatments (e.g., behavioral, client centered, psychodynamic) and treated problems (e.g., aggression, depression, anxiety). One (Weisz et al., 1987) reported a mean effect size of .58 (i.e., posttreatment mean for treatment group minus mean for control group divided by standard deviation of outcome measure); this indicates that the average treated teen, after treatment, was at the 72nd percentile of the untreated control group, averaging across all outcome measures. The other meta-analysis (Weisz, Weiss, et al., 1995) reported a mean effect size of .82, placing the average treated teen, after treatment, at the 79th percentile of the untreated controls. Commonly used benchmarks classify effect sizes of .50 as medium and .80 as large (see J. Cohen, 1988). Figure 1 shows effect sizes from analyses of adolescent studies relative to adult and child studies; there is considerable variability in findings within each age group, with the range for adolescents similar to the range for adults and children.

List of Empirically Supported Treatments

As a complement to such summary evidence on mean effects across multiple treatments and multiple problems, a task force of the American Psychological Association's Division 12 Section on Clinical Child Psychology (see Lonigan, Elbert, & Bennett-

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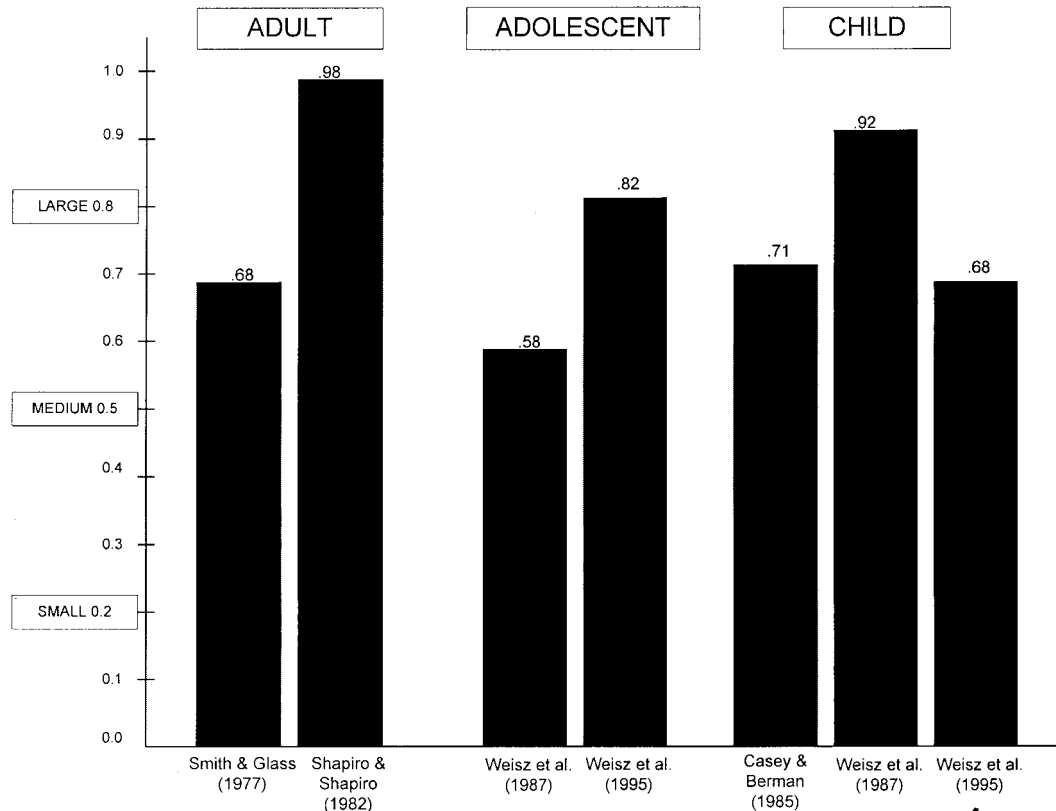


Figure 1. Mean effect sizes from adult, adolescent, and child treatment outcome studies. Note that the Smith and Glass (1977) study collection included some youth samples but was predominantly composed of treatment outcome studies with adults.

Johnson, 1998) surveyed the evidence and identified specific child and adolescent treatments that met criteria for the status of “empirically supported treatment.” Some 25 treatments were identified as empirically supported. Our review of the supporting studies shows that 14 of the 25 treatments have shown beneficial effects with adolescents (defined as a sample averaging 11.0 years or older—see rationale below). These 14, listed in Table 1, include treatments for four broad categories that encompass the majority of teen clinic referrals—that is, depression, anxiety, attention-deficit/hyperactivity disorder (ADHD), and conduct problems.

Thus, research has produced treatments that have respectable mean effects with adolescents (meta-analyses), and specific empirically supported treatments exist for some of the major clinical conditions of adolescence (task force list). But are there gaps or limitations in the adolescent treatment research from a developmental perspective?

Adolescent Psychopathology and Coverage of Adolescents in Treatment Research

We consider this question by noting developmental epidemiology findings and the place of adolescents in treatment research and among specific, empirically supported treatments.

Rates of Psychopathology in Adolescents

Summary reviews of epidemiology findings (e.g., P. Cohen, Provet, & Jones, 1996; Roberts, Attkisson, & Rosenblatt, 1998)

show slightly higher psychopathology rates for adolescent samples than child samples. For example, Roberts et al. (1998) reported median prevalence rates, based on 52 studies over four decades, at 8% for preschoolers, 12% for preadolescents, and 15% for adolescents. Cross-study variability was high; in 12 adolescent samples, prevalence ranged from 6% to 41%. Cross-study differences in sampling, assessment, and case ascertainment methods, and prevalence time frames (e.g., current, 6 months, 1 year) hamper clear-cut interpretation of findings. Indeed, child and adolescent epidemiology research could be made much more useful to the field by increasing uniformity across these various dimensions. Still, most findings did show substantial adolescent rates, raising the question of how much research emphasis is being given to treatments for adolescent dysfunction.

Representation of Adolescents in Psychotherapy Research Reviews

Research reviews suggest that treatment outcome research may indeed underemphasize adolescents. Large-scale reviews (e.g., U.S. Congress Office of Technology Assessment, 1991) document the modest attention paid to adolescents relative to adults. And reviews of treatment research have found fewer studies of adolescents than of younger groups. Only 38% of the studies in the Weisz, Weiss, et al. (1987) meta-analysis covering ages 4–18 and 25% of the studies in the Weisz et al. (1995) meta-analysis covering ages 1–17 were done with predominantly adolescent

Table 1
Empirically Supported Psychotherapies Sometimes Used With Adolescents

Disorder	Treatment
Depression ^a	Cognitive-behavioral therapy for adolescents (P) (e.g., Lewinsohn, Clarke, Hops, & Andrews, 1990)
Fears, phobias, and anxiety disorders ^b	Modeling: Participant modeling (W) for fears and phobias (e.g., Bandura, Blanchard, & Ritter, 1969) Live modeling (P) for fears and phobias (e.g., Bandura, et al., 1969) Classical: Imaginal desensitization (P) for fears and phobias (e.g., Kondas, 1967) Reinforced practice for fears (e.g., Obler & Terwilliger, 1970) Cognitive-behavior therapy (P) for anxiety disorders (e.g., Kendall, 1994; Kendall et al., 1997)
Attention-deficit/hyperactivity disorder ^c	Behavioral parent training (W) (e.g., Pisterman et al., 1989)
Conduct problems and conduct disorder ^d	Behavioral parent training based on <i>Living With Children</i> (W) by Patterson & Gullion, 1968 (e.g., Alexander & Parsons, 1973) Anger control training with stress inoculation (P) (e.g., Feindler, Marriott, & Iwata, 1984) Anger coping therapy (P) (e.g., Lochman, Burch, Curry, & Lampron, 1984) Assertiveness training (P) (e.g., W. C. Huey & Rank, 1984) Multisystemic therapy (P) (e.g., Henggeler et al., 1992) Problem-solving skills training (P) (e.g., Kazdin et al., 1989) Rational-emotive therapy (P) (e.g., Block, 1978)

Note. (P) = placed in the “probably efficacious” category by the task force reviewers. (W) = placed in the “well-established” category by the task force reviewers.

^a See review by Kaslow & Thompson (1998) for references and details. ^b See review by Ollendick & King (1998) for references and details. ^c See review by Pelham, Wheeler, & Chronis (1998) for references and details. ^d See review by Brestan & Eyberg (1998) for references and details.

samples, and Kazdin, Bass, et al. (1990) reported that a majority of their meta-analytic collection covering ages 4–18 was with 6–11-year-olds, not adolescents.

Representation of Adolescents in Treatment Studies Reviewed for the Present Article

To directly assess representation of adolescents in treatment research (and to explore other developmental questions, noted below), we conducted our own literature search. We examined published meta-analyses and reviews, searched the PsycINFO database, and hand-searched 30 relevant journals through January 2000, seeking studies that (a) tested psychosocial treatments for problems in youngsters averaging less than 18 years and (b) met methodological standards for acceptable research (e.g., random assignment, at least one treatment and one control group).¹ Colleagues suggested additional studies our search had missed. The process led us to 312 methodologically acceptable treatment outcome studies, published 1963–2000. For the present article, we focused on studies with adolescent samples, defined as having a mean age of 11.0–17.9 years. We selected 11.0 as bottom of the range because by that age, initial pubertal changes have begun in most boys (e.g., enlargement of testes) and are well underway in most girls (e.g., breast buds, height spurt, pubic hair growth; see, e.g., Arnett, 2001; Gallahue & Ozmun, 1995; Jaffe, 1998). Our upper cutpoint was set at age 17.9, just before the 18th birthday, roughly the point at which youngsters are said to enter “emerging adulthood,” with pubertal changes plateauing, school and work patterns shifting markedly, and living with parents ending (see Arnett, 2000, 2001).² Of the 312 total studies, 114 (36.5%) had used adolescent samples; 36.5% is substantial representation but is perhaps disproportionately small relative to the prevalence of psychopathology in adolescents.

Status of Adolescents Among Empirically Supported Treatments

Another way to assess the attention given to adolescents in treatment research is to examine the specific treatments identified as empirically supported in the task force report noted earlier (Lonigan et al., 1998). Of the 25 treatments on the original list, the 14 shown in Table 1 have been tested at least partly with adolescents (mean age greater than 11). But of these 14, 7 are, in part or in full, downward adaptations of treatments developed for

¹ We first reviewed these meta-analyses and reviews: Baer and Nietzel (1991); Casey and Berman (1985); Durlak, Fuhrman, and Lampman (1991); Dush, Hirt, and Schroeder (1989); Graziano and Diament (1992); Hazelrigg, Cooper, and Borduin (1987); Kazdin et al. (1990); Prout and DeMartino (1986); Smith, Glass, and Miller (1980); Tramontana (1980); Weisz et al. (1987); and Weisz et al. (1995). We also searched PsycINFO using (a) the same 21 terms used as key words in the Weisz et al. (1987, 1995) meta-analyses (e.g., *counseling, therapy*), (b) age group terms *child* and *adolescent*, (c) publication dates from January 1993 to January 1999 (1993 was the endpoint of the Weisz et al., 1995, search), and (d) English language. Finally, we hand searched the same 30 journals searched for the Weisz et al. (1995) meta-analysis. Of the studies identified, we retained only those (a) that selected samples for psychological problems or maladaptive behavior, (b) that tested a form of psychotherapy (i.e., intervention to alleviate nonnormative psychological distress, reduce maladaptive behavior, or increase deficient adaptive behavior through counseling, interaction, a training program, or a predetermined treatment plan), (c) that had a randomly assigned comparison or control group, and (d) that included at least one outcome measure of the problem for which the sample was selected. We included comparisons of therapy versus no therapy, therapy versus active control, therapy versus therapy, and therapy versus medication.

² This method of age grouping is not ideal; a sample with mean age of, say, 11.5 would have numerous nonadolescent participants. Precision could be increased if researchers reported primary findings separately for children and adolescents in their samples.

adults (i.e., the 2 cognitive-behavioral treatments, imaginal desensitization, the 2 anger programs, assertiveness training, and rational-emotive therapy). Six others (i.e., the 2 modeling treatments, reinforced practice, problem-solving skills training, parent training based on Patterson and Gullion's [1968] book, *Living With Children*, and parent training for ADHD) are interventions developed primarily for children but sometimes extended upward into the early adolescent age group. The downward and upward adaptations often involve some age-calibrated adjustments in ways of presenting issues, concepts, and skills, but the core content is generally that emphasized in adult or child interventions and thus not created because of research findings on, or even clinical experience with, adolescents.

Only one treatment listed in Table 1, *multisystemic therapy* (Henggeler, Schoenwald, Borduin, Rowland, & Cunningham, 1998), has its empirical and clinical roots in adolescence. Although the theoretical origins of the treatment—general systems theory and social ecology—are not age specific (the treatment focuses on changing elements of the social environment), the crucible in which the treatment principles were developed was clinical work with delinquent adolescents, and the majority of participants in the primary research trials have been teenagers. Thus, of the 25 treatments for children and adolescents that have been identified by specialists as empirically supported, only one was originally developed specifically for adolescents.

Specific Forms of Psychopathology and Corresponding Treatment Research With Adolescents

Another way to think about adolescent representation in the treatment literature is to assess coverage of specific forms of psychopathology relative to their prevalence among teens. We used our pool of 114 adolescent treatment studies to do this, focusing on seven categories frequently included in epidemiological research: anxiety, depression, conduct problems, substance use

disorders, ADHD, bipolar disorder, and eating disorders. Table 2 shows the mean prevalence (and range) reported for children and adolescents for each category, on the basis of subsets of 17 epidemiological studies (see Angold, Costello, & Erkanli, 1999; P. Cohen et al., 1996) and whether the figures reflect increased or decreased prevalence from child to adolescent samples. Again we note that study-to-study method differences complicate interpretation of the findings. The time frame for prevalence assessment varied across studies from present state to past 12 months, no one time frame was consistently reported across all the studies, and no single study spanned all important types of dysfunction. The last column shows the number (and percentage) of treatment outcome studies focused on each category of dysfunction.

Table 2 conveys a rough picture of the coverage of various psychopathology categories in treatment research relative to their estimated prevalence in adolescence. The table shows, for example, that 60% of all the adolescent treatment studies focused on two categories alone—i.e., anxiety and conduct problems—whereas depression, though similar in prevalence in adolescence, has been the focus of only 11% of the treatment studies. Surprisingly few controlled trials have been devoted to such high-profile adolescent problems as substance use and eating disorders; the latter is low in prevalence, at least at clinically diagnosable levels, but the associated risks, which include death, certainly warrant more attention by treatment researchers than the table suggests it has received. We now consider certain features of specific categories within the table.

Anxiety Disorders

Different anxiety disorders show different age trends; two that increase in prevalence in adolescence are social phobia (involving anxiety about social and performance situations) and panic disorder (involving attacks of sudden, intense apprehension or terror, often with physical symptoms). Many adults with social phobia

Table 2
Representation of Key Target Disorders in Adolescent Treatment Research

Target disorders	Mean prevalence among children (and range)	Mean prevalence among adolescents (and range)	Increase in adolescence	No. (%) of studies
Anxiety disorders	11.4% (7.4–15.4)	7.2% (1.0–19.7)	yes ^a	27 (23.7)
Unipolar depression	1.7% (1.6–1.8)	5.6% (1.8–18.0)	yes	12 (10.5)
Conduct problems	9.5% (9.1–9.8)	5.6% (0.5–17.7)	yes ^b	42 (36.8)
Substance use disorders	—	2.5% (2.3–2.7)	yes	6 (5.3)
Attention-deficit/hyperactivity disorder	4.5% (2.3–6.7)	1.4% (0.1–4.8)	no	3 (2.6)
Bipolar disorder	—	0.25% (0.20–0.29)	yes	0 (0)
Eating disorders	—	0.23% (0.18–0.27)	yes	1 (0.9)

Note. The following epidemiological studies provided prevalence data for the table: Anderson, Williams, McGee, & Silva (1987); Angold, Costello, Farmer, Burns, & Erkanli (1999); Bird, Gould, & Staghezza (1993); Blazer, Kessler, McGonagle, & Swartz (1994); Costello et al. (1988); Costello, Farmer, Angold, Burns, and Erkanli (1997); Essau, Conradt, & Petermann (1999); Feehan, McGee, Raja, & Williams (1994); Fergusson, Horwood, & Lynskey (1993); Kashani et al. (1987); Kessler, McGonagle, Swartz, Blazer, & Nelson (1993); Lewinsohn, Hops, Roberts, Seeley, & Andrews (1993); McGee et al. (1990); Rohde, Lewinsohn, & Seeley (1991); Simonoff et al. (1997); Velez, Johnson, & Cohen (1989); Wittchen, Nelson, & Lachner (1998). Dashes indicate disorders for which prevalence is thought to be very low and reliable estimates difficult to obtain.

^a Social phobia (Essau, Conradt, & Petermann, 1999; Giaconia et al., 1994) and panic disorder (King, Ollendick, & Mattis, 1994; Ollendick, 1998; Ollendick, Mattis, & King, 1994; V. Reed & Wittchen, 1998) increase during adolescence. ^b Conduct disorder increases during adolescence from its rates in childhood (Kazdin, 1998).

report that their problems began in early adolescence (e.g., Giacomia et al., 1994; Holmbeck & Updegrove, 1995), and panic disorder, although rare before puberty, becomes increasingly common in adolescence (King, Ollendick, & Mattis, 1994; Ollendick, 1998; Ollendick, Mattis, & King, 1994; V. Reed & Wittchen, 1998). Of our 114 studies, 14 (12.3%) tested treatments (e.g., behavioral, cognitive-behavioral, eclectic) for problems with social anxiety and for social phobia. By contrast, we found no studies of treatment for panic disorder.

Depression and Suicidal Behavior

Depressive symptoms and disorders increase sharply in adolescence, particularly in girls, with prevalence rates among girls eventually doubling those for boys (Angold, Costello, & Erklani, 1999; Avenevoli & Steinberg, in press; Birmaher, Ryan, Williamson, Brent, & Kaufman, 1996; Holmbeck & Updegrove, 1995; Kazdin, 1993). The behavioral expression of depression also changes in adolescence, with increased hypersomnia, anhedonia, hopelessness, weight loss, substance use, and suicide attempts (Avenevoli & Steinberg, in press; Garber, Keiley, & Martin, in press). From 7% to 16% of adolescents, across surveys, have reported attempting suicide at least once, and suicide is the third most common cause of death among U.S. 15–19-year-olds (A. L. Miller & Glinski, 2000; National Center for Health Statistics, 1996). In our review, we found 12 studies (10.5%) investigating treatments for adolescent depression (e.g., behavioral, cognitive-behavioral, interpersonal, nondirective, family systems), a number disproportionately low relative to the prevalence at this age level and relative to the danger posed by the risk of suicide. None of the studies noted any effort to address suicidality; four noted that they excluded subjects who were suicidal (instead referring them elsewhere or offering usual clinical care to them).³

We did find two studies meeting our methodological criteria that specifically addressed suicidal behavior, but neither of these involved treatment for depression. One (Cotgrove, Zirinsky, Black, & Weston, 1995) offered adolescents who had overdosed a token for readmission to the hospital as an alternative way to escape their environment temporarily. The other study (Harrington et al., 1998) also focused on youngsters who had overdosed. Using the rationale that overdosing (“self-poisoning”) in adolescents is strongly related to family dysfunction, Harrington et al. used a brief, home-based family therapy program emphasizing family communication and problem solving. Neither study found a significant benefit over treatment as usual. Indeed, a recent review of these and other suicide intervention studies, including a broader array of studies than our criteria permitted (e.g., Rotheram-Borus et al., 1996), reached a discouraging conclusion: “In general, control conditions are just as effective at reducing suicidal behavior as experimental conditions” (A. L. Miller & Glinsky, 2000, p. 1131).

Conduct Problems and Delinquency

Although disobedience and oppositional behavior at home and school and youthful displays of aggression show relatively high prevalence in childhood, escalation of oppositional and rule-violating behaviors into full-fledged violence, conduct disorder, and criminal activity tend to occur in adolescence (Lerner, Villaruel, & Castellino, 1999; Ollendick & Vasey, 1999). Societal

concerns over violent and criminal behavior warrant a response by the treatment research community, and that response appears massive by our tally, with more than a third of all the studies in our pool (36.8%) devoted to treatment of conduct problems (e.g., with behavioral parent training, cognitive-behavioral therapy, multisystemic therapy).

Substance Use

Substance use and abuse typically begin in adolescence, with rates of drug and alcohol use higher in this period than in adulthood (Lerner et al., 1999; Steinberg & Morris, 2001). Most teens who abuse drugs and alcohol, like most who commit delinquent acts, grow up to be sober, law-abiding adults (see Steinberg, 1999), perhaps in part because marriage, parenthood, and full-time work have settling effects (see Arnett, 2000; Sampson & Laub, 1995). Researchers are trying to find ways to predict which youngsters with problems will fit the “adolescent-limited” pattern and which are beginning a “life-course-persistent” pattern (Moffitt, 1993), but such prediction is inexact at present. Moreover, even for youths whose serious substance abuse and dependence are destined to be adolescent limited, the consequences can be dire while the problem exists, both for the using teens and for those who cross their paths. This fact highlights the need for efficacious treatments. In our pool of studies, we found six (5.3%) that investigated treatments for substance use and abuse among adolescents (e.g., multisystemic therapy, functional family therapy).

ADHD

Table 2 shows a decline in prevalence of ADHD from childhood to adolescence, perhaps in part because ADHD is defined somewhat by a mismatch between person and environment. As youngsters leave elementary school, they are no longer required to sit for long periods in the same classroom with the same teacher, and they are freer to choose classes and other activities that fit their style and preference. This may reduce environmental constraints that make some youths appear inattentive, impulsive, and hyperactive. Whatever the cause of the decline, rates of ADHD are still significant in adolescence, and the risks of adolescent impulsivity and poor self-control are substantially greater than in childhood; thus, the relatively modest output of research on psychosocial treatments (we found only three studies) is striking. One problem may be that the behavioral parent training and classroom programs that work with ADHD children (see Pelham, Wheeler, & Chronis, 1998) may not fare so well with teens. Indeed, the author of one widely used behavioral parent program has argued that adolescents should not be considered candidates for the program, that they often do not respond well, and that their reaction may lead to escalation in family conflict (see Barkley, 1997, p. 5). One consequence of the limited psychosocial treatment research with teens is that stimulant medication is likely to become the evidence-based treatment of choice, by default (see Weisz & Jensen, 1999).

³ Exclusion of suicidal individuals may reflect concern over complex human subjects issues that can arise in treatment trials. As a complement to our review, we refer interested readers to the research literature on suicide prevention (see Garland & Zigler, 1993).

Bipolar Disorder

Bipolar disorder, marked by severe and cyclical mood, cognition, and activity changes, is usually discussed as an adult condition, and it is indeed rare in childhood; but rates increase markedly after puberty is well underway, and the prevalence in adolescents may match that of adults (Geller & Luby, 1997). The racing thoughts, grandiosity, driven activity, and impulsivity associated with manic episodes can make normal functioning (e.g., conversation with peers, studying for school) impossible and lead to various criminal acts (e.g., teens in a manic state may believe they are above the law), sexual aggression (including forcing peers and propositioning teachers), and life-threatening behaviors (e.g., jumping out of windows, believing they can fly). As Table 2 shows, prevalence of the disorder is low, but the risks are so severe that the absence of a single treatment study meeting our inclusion criteria is striking. Of course, treatment for this condition is more likely to involve medication than psychosocial approaches.

Eating Disorders

Eating disorders, such as anorexia nervosa and bulimia nervosa, are a major problem primarily for girls, but rarely before puberty (Holmbeck et al., 2000; Kazdin, 1993). Prevalence estimates for adolescents and young adults have run as high as 0.5–1.0% for anorexia (Hoek, 1993; Hsu, 1990) and 1–3% for bulimia (Garfinkel et al., 1995), but general population epidemiological studies show much lower rates (see Table 2). Of course, even subclinical versions of the two conditions (i.e., showing most but not all symptoms required for a formal diagnosis) can pose significant health risks. And for those diagnosed with anorexia, the mortality rate is more than 12 times that of the annual death rate for females ages 15–24 from all other causes (Sullivan, 1995). The serious risks they pose make teen eating disorders a critical target for treatment research. Yet we found only one treatment study that focused on adolescent anorexia (family systems therapy vs. ego-oriented individual therapy) and none on bulimia.⁴

Comorbidity

A major limitation of the treatment research as a whole is its tendency to focus on single problems or diagnoses. Extensive evidence (e.g., Anderson, Williams, McGee, & Silva, 1987; Angold, Costello, & Erkanli, 1999) now suggests that adolescent problems do not come in such neat, one-diagnosis units, but in bundles, such that ADHD is highly comorbid with conduct disorder, conduct disorder is often combined with depression, and so forth. Rates of comorbidity are striking in samples randomly drawn from the community and markedly higher in clinical samples of referred youth (Angold, Costello, & Erkanli, 1999). Indeed, it is not unusual for youth in such clinical samples to average three or more diagnoses each from the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 1994). Will a treatment designed for teen depression work with teens who are depressed but also have severe conduct problems, perhaps combined with ADHD? And can a single treatment address all three problems concurrently? We do not know the answer to these or related questions, because comorbidity is so rarely addressed in adolescent treatment research. Indeed, only 15 (13%)

of our 114 studies even drew their samples from clinical settings, and only 11 (10%) of the studies explicitly included youth with comorbid disorders; most either failed to assess for comorbid disorders or explicitly excluded youth with comorbid disorders. Kendall and Clarkin (1992) referred to comorbidity as the “premier challenge facing mental health professionals in the 1990s” (p. 833). The 1990s have now come and gone, and the challenge remains largely unaddressed.

In summary, some key target problems of adolescence have received a good deal of research (e.g., conduct problems), whereas others of genuine import have had little or no coverage in the treatment literature (e.g., panic disorder, eating disorders, suicidality), and the common tendency of problems and diagnoses to come in clusters (i.e., comorbidity) is a challenge that remains largely untouched in the adolescent arena.⁵

Biopsychosocial Development and Treatment Research in Adolescence

Holmbeck and colleagues (2000) argued that adolescence “is characterized by more biological, psychological, and social role changes than any other stage of life except infancy” (p. 335). Because many agree that understanding adolescence requires close attention to biological, psychological, and social dimensions, biopsychosocial models of adolescent development have proliferated (see Compas, Hinden, & Gerhardt, 1995; Holmbeck et al., 2000; Steinberg & Morris, 2001). Some (e.g., Holmbeck et al., 2000; Kendall & Holmbeck, 1991; Toth & Cicchetti, 1999) have also argued that the major biopsychosocial changes of adolescence make this a developmental period in which intervention can have especially lasting impact. Such reasoning raises the question of how much emphasis the three broad dimensions of adolescent development have received in treatment research with this age group. To answer the question, we return to our collection of 114 adolescent outcome studies. In doing so, we are not implying that every treatment study should address all three dimensions, but we do think it is useful to ponder the *relative* attention given to biology, psychology, and social functioning in research to date.

Biological Development and Adolescent Treatment

A prolonged and transforming surge of biological development is a hallmark of adolescence.⁶ Growth spurts and plateaus, changes

⁴ There may be more relevant evidence than our review revealed, because samples including mixtures of adults and adolescents may have been missed in our search. It may also be true that the serious, life-threatening nature of anorexia may discourage studies involving random assignment to a waitlist or no-treatment group; however, recall that our search included studies comparing alternative treatments to one another, so that random assignment to an inert condition was not a requirement for inclusion.

⁵ Treatment researchers may not be alone in their relative neglect of some significant adolescent problems and issues; developmental researchers have also noted that there is a large gap between the problems facing most teens and the research of most developmentalists (e.g., Lerner, Villarruel, & Castellino, 1999).

⁶ Detailed discussion is beyond the scope of this article, but growing evidence suggests that biological development in adolescence (and other age periods) may include some forms of neural plasticity, with even brain structure and function potentially malleable in response to favorable or adverse experience (see Cicchetti & Cannon, 1999; Cicchetti & Tucker,

in body shape and facial features, and the emergence of sexual and reproductive capacity are greeted with a variety of reactions by boys and girls, ranging from distress to delight (see Holmbeck et al., 2000). None of these changes is necessarily traumatic; indeed, the notion that adolescence is necessarily a time of storm and stress has been largely dismissed by many researchers (see Arnett, 1999; Steinberg & Morris, 2001), and the idea that puberty brings on “raging hormones” is now viewed by experts as an exaggeration (Brooks-Gunn, Graber, & Paikoff, 1994; Brooks-Gunn & Reiter, 1990). To be sure, changes in hormone levels and the functioning of the endocrine system (e.g., rise in adrenal and gonadal hormones) have shown associations with adjustment, mood, and behavior problems during adolescence (Avenevoli & Steinberg, in press; Finkelstein et al., 1997). For example, pubertal increases in estrogen in girls and testosterone in boys are correlated with increases in violence and aggression (Finkelstein et al., 1997). But over the course of adolescence, hormonal variations account for a very small proportion of the variance in negative affect and adjustment problems, compared with, say, social influences (see, e.g., Brooks-Gunn et al., 1994; Sussman et al., 1998).

Pubertal timing. There is evidence that the nature of bodily changes with puberty may be less a risk factor than their timing. Boys who mature late are at risk for deficits in self-esteem (A. C. Peterson, 1985); early-maturing boys, though their self-esteem may be fine, are at increased risk for drug and alcohol use, truancy, and precocious sex (Williams & Dunlop, 1999), owing in part to increased association with older peers (Silbereisen, Petersen, Albrecht, & Kracke, 1989). Early-maturing girls show increased risk of depression, anxiety, and disordered eating (Ge, Conger, & Elder, 1996) as well as elevated rates of drug and alcohol use, early sexual intercourse, and delinquency (e.g., Flannery, Rowe, & Gulley, 1993), particularly when they attend coeducational schools and have numerous opposite-sex friendships (Caspi, Lynam, Moffitt, & Silva, 1993).

Impact of biological change plus contextual factors. Risk of problems and disorder may also increase when key biological processes of adolescence are paired with significant life stresses. For example, evidence suggests a connection between girls’ bodily changes and the development of depression and eating disorder (Wichstrom, 1999), but the connection may be moderated by social context. That is, with normal adolescent increases in body mass, girls may develop a more negative body image, which can lead to depressive symptoms and disordered eating (Archibald, Graber, & Brooks-Gunn, 1999), but the connection may be most marked in girls who are interested in dating or involved in a romantic relationship (Cauffman & Steinberg, 1996). As another example, evidence suggests that distress over bodily changes is more likely in teens who lack information about adolescent biological change and sexuality (e.g., Ruble & Brooks-Gunn, 1982), and that the manner in which family and peer group members respond to the adolescent’s bodily changes affects how those

changes are experienced by the adolescent (see review by Holmbeck et al., 2000). In general, it is clear that biology is a key player, interacting with social and cognitive influences throughout adolescence to magnify both opportunities and risks.

Biological factors and psychotherapy. How well did the 114 studies in our survey fare in their attention to the biological dimension of adolescence? As shown in Table 3, we found only 12 (10.5%) studies that addressed biological factors in treatment. These included (a) providing education about diet, exercise, and pubertal development to adolescents and their parents in treatments for anorexia (Robin, Siegel, Koepke, Moye, & Tice, 1994) and obesity (Coates, Killen, & Slinkard, 1982; Israel, Stolmaker, & Andrian, 1985; Lansky & Brownell, 1982; Lansky & Vance, 1983); (b) providing psychoeducation about the effects of substances in treatments for substance abuse (Figurelli, Hartman, & Kowalski, 1994); (c) training adolescents to recognize the physiological markers of anxiety (Kendall, 1994; Kendall et al., 1997) and using biofeedback in treating anxiety (Hiebert, Kirby, & Jaknavorian, 1989; Wenck et al., 1996); and (d) including (Henggeler, Pickrel, & Brondino, 1999) or comparing (Brown, Wynne, & Medenis, 1985; see below) pharmacotherapy with psychotherapy. Note that only Item a in this list reflects a specific focus on pubertal issues or on other aspects of the distinctive biology of adolescence. Given the many findings regarding the impact of puberty, adolescent bodily changes, and the timing thereof, it is sobering to note how rarely these themes have entered into most adolescent treatment research. Indeed, only 2 (1.8%) studies examined any potential moderating or mediating role of biological factors in relation to treatment outcome. Coates et al. (1982) found that weight loss was related to decreased food and fat intake and to increased exercise. Israel et al. (1985), however, found no relationship between self-reported eating habits and weight loss.

Psychotropic medication. Any discussion of biology and treatment in adolescence requires attention to the role of medication. The multiform biological changes accompanying maturation in general and puberty in particular can markedly influence response to psychotropics (including pharmacodynamics, pharmacokinetics, and behavioral response), so findings of adult medication trials cannot be safely generalized to adolescents (or children). Yet because so few trials have been conducted on most psychotropics with minors (Jensen et al., 1999; Kearney & Silverman, 1998; exceptions are stimulant drugs for ADHD, selective serotonin reuptake inhibitors [SSRIs] for obsessive-compulsive disorder, and antipsychotics for Tourette’s disorder), physicians often do extrapolate from adult studies in making medication decisions for teens. U.S. data for 1995 show more than 9 million “mentions” (i.e., prescriptions, refills, recommendations, or free samples) of psychotropic drugs for minors during doctor visits (Weisz & Jensen, 1999), and the American Academy of Pediatrics Committee on Drugs (1996) estimated that 80% of all medication use with minors is “off label,” not actually guided by research with that age group.

As one illustration of the problem, Birmaher, Ryan, Williamson, Brent, Kaufman, Dahl, et al., (1996) reported that whereas most (66%) controlled trials of tricyclic antidepressants (TCAs) have found them to be more effective than placebo for adults, trials with adolescents have not found TCAs superior to placebo. Birmaher et al. suggested that adolescents differ in their metabolism of TCAs,

1994). Also, findings in adults (reviewed by Baxter, 1995) have shown altered functional activity in the right caudate nucleus following successful treatment of obsessive-compulsive disorder, whether by medication or behavioral therapy. Such findings hint at possible links between biological development and treatment that are more dramatic than most of us have seriously considered to date.

Table 3
Representation of Developmental Factors in Adolescent Treatment Research

Developmental factor	No. (%) of studies that addressed factor in treatment	No. (%) of studies that assessed factor	No. (%) of studies that examined relationship between factor and outcome	No. (%) of studies finding relationship between factor and outcome
Biological	12 (10.5)	10 (8.8)	2 (1.8)	1 (0.9)
Psychological				
Motivation	39 (34.2)	4 (3.5)	1 (0.9)	0 (0)
Cognition	58 (50.9)	29 (25.4)	10 (8.8)	6 (5.3)
Social				
Peers	43 (37.7)	17 (14.9)	6 (5.5)	5 (4.4)
Family	48 (42.1)	34 (29.8)	19 (16.6)	12 (10.5)
School	22 (19.2)	29 (25.4)	0 (0)	0 (0)
Other contexts	11 (9.6)	2 (1.8)	0 (0)	0 (0)

perhaps because of immaturity of their noradrenergic system and changes in hormone levels. Similarly, whereas most controlled studies of SSRIs have found them more effective than placebo for adult depression, the limited evidence on adolescents is mixed (Birmaher, Ryan, Williamson, Brent, & Kaufman, 1996). Despite the lack of supporting evidence, antidepressants are commonly prescribed for adolescents, with more than 2 million mentions in 1995 (Jensen et al., 1999).

Another problem contributing to off-label use is that published reviews on psychotropics frequently combine child and adolescent studies into a single group, thus limiting information on developmental differences in medication response. This slows progress toward developmentally sensitive models for biological mediation of medication effects. It is beyond the scope of this article to fully survey the literature on psychotropic medications, but their widespread and increasing use with both adolescents and children highlights the need for a developmentally informed understanding of their effects. Moreover, because their relative simplicity and modest cost makes psychotropic medications attractive to managed care as an alternative to talk therapies, more data are needed on the safety and relative effects, short and long term, of psychosocial and pharmacological interventions, used separately and in combination (Weisz & Jensen, 1999).

Medication and psychotherapy. The apparent widespread use of psychotropics with teens, and the apparent weak empirical support for much of this use, highlights the need for evidence on the relative benefits of medication versus psychotherapeutic alternatives for a variety of conditions in adolescence. To our surprise, we found only one study comparing psychotherapy with pharmacotherapy.⁷ Brown, Wynne, and Medenis (1985) compared cognitive therapy alone, Ritalin alone, and cognitive therapy combined with Ritalin for youth with ADHD; they found both Ritalin and the combined treatment superior to cognitive therapy alone in improving attention and behavior.

Psychological Development and Adolescent Treatment

There is a particularly clear connection between the psychological dimension of development and adolescent treatment. Several aspects of the connection have been discussed wisely by others (e.g., Holmbeck et al., 2000; see Shirk, 1988; Silverman & Ollendick, 1999). Space constraints require that we narrow our focus; thus, we consider two components: motivation and cognition.

Motivation. Adolescents in treatment can range from those who are self-referred and highly motivated to those who see no problem, have no motivation for change, and are in treatment only because they have to be. Low motivation for therapy may be more common among teenaged boys than girls but can be a problem for youth of both genders who are more peer than adult oriented. Low motivation can undermine attentiveness and involvement and can hamper learning, skill acquisition, and application of skills outside of therapy (Lepper, Sethi, Dialdin, & Drake, 1997; Weisz, 1997), yet many clinicians and researchers consider problem acknowledgement, coupled with willingness and motivation for treatment, to be crucial for therapy success (e.g., Kazdin, Siegel, & Bass, 1990; Tuma & Sobotka, 1989). Low motivation can also retard or prevent the development of a working alliance between youth and therapist, yet a number of experts regard a positive therapeutic alliance as critical to treatment success (Bordin, 1979; Horvath & Luborsky, 1993; Shirk & Saiz, 1992; Smith-Acuna, Durlak, & Kaspar, 1991). Thus, it seems important to assess motivation before treatment and to address low motivation where it is detected, to enhance therapy involvement and to support development of a working alliance.

Motivation in the treatment studies. Reviewing the 114 treatment studies, we found that many intervention programs appear to tacitly assume intrinsic motivation by treated youth, but 39 (34.2%) of the studies did report at least one procedure designed to support or enhance motivation for treatment (e.g., giving rewards for participation in therapy, identifying and working toward goals the youth identified as important). Only 4 studies (3.5%) assessed the youth's motivation for treatment before starting. In addition, Leeman, Gibbs, and Fuller (1993) compared a positive peer culture group treatment with a 5-min motivation-induction control condition, emphasizing personal choice and responsibility and establishing personally meaningful goals with incarcerated delinquent youth. They found greater reductions in delinquent behavior in the

⁷ Our search procedure excluded single-subject and within-group experimental designs, so it missed studies comparing psychotherapy and pharmacotherapy through such designs, which are frequently used in treatment research on ADHD. A supplemental search, however, suggested that even single-subject and within-group studies comparing psychotherapy and pharmacotherapy are rare with adolescents; more are done with children and adults.

treatment group than in the motivational control group, but their motivational approach does seem well suited to treatment of adolescents, and it may warrant attention as a *pretreatment* intervention in future research.

Cognition. Adolescents are both information processors and theorists. They are continually observing their experience, storing it in memory, retrieving it for reflection, and attributing meaning to it. Such cognitive activities by the adolescent can be grist for the therapist's mill. They can also, of course, be applied by the teen client to the process and content of therapy, which is perceived and interpreted, like other experience, within the framework of the youngster's developing cognitive system. The characteristics and capacities of that system place boundaries on the extent to which the therapist can use various interventions and the ways various skills and concepts must be conveyed so as to be assimilated. Moreover, the content of the cognitive system (e.g., attributional habits; schemas for self, others, and relationships) may need to be assessed and directly addressed in treatment (e.g., examining and challenging negative schemas in depression or hostile attributional bias in treatment for conduct problems).

Fortunately for the developmentally oriented therapist, there is an extensive literature on the cognitive dimension in adolescent development. Piaget's (e.g., 1969) constructivist perspective, highly influential in the 1960s through 1980s, emphasized the development of abstract hypothetico-deductive reasoning with the emergence of formal operations. Critical examination of Piaget's theory (e.g., Keating, 1990; Moshman, 1998) has led to an increased emphasis on information-processing and computational models stressing specific skills that improve in the adolescent years—for example, knowledge base, capacity for cognitive self-regulation, and memory storage capacity and organizational efficiency. Summarizing findings from various theoretical perspectives, Holmbeck and colleagues (2000) stressed three cognitive skills of adolescence that are especially relevant to therapy: "abstraction, consequential thinking, and hypothetical reasoning" (p. 348).

These skills are important in several forms of treatment used with adolescents, particularly cognitive-behavioral therapy, which can require reasoning through hypothetical situations, anticipating consequences of various actions one might take to solve a problem, and recursively thinking about one's own thinking—for example, to identify irrational beliefs or a negatively biased style. Given the skills required in cognitive-behavioral therapy, one might suspect that level of cognitive development sets limits on potential outcomes. Durlak, Fuhrman, and Lampman (1991) tested this notion, using age as a proxy for cognitive level, in a meta-analysis of 64 cognitive-behavioral outcome studies; effect sizes were, in fact, markedly larger for adolescents (.92 for ages 11–13) than for children (.57 for ages 7–11, .55 for ages 5–7). In harmony with this finding, several authors (e.g., Holmbeck et al., 2000; Shirk, 1999) have suggested that adolescents may benefit from interventions designed to shape or accelerate cognitive development. Such cognitive-development priming may be designed to enhance adolescents' responsiveness to an upcoming intervention, or the priming itself may be the intervention (as in Arbuthnot & Gordon, 1986, below). Either way, the approach warrants attention and study.

Because adolescents span a broad range of cognitive ability and conceptual sophistication, and because cognitive capacity may

moderate the impact of various treatment approaches, the cognitive dimension may warrant close scrutiny in work with teens. Such scrutiny may take a variety of forms, such as assessing cognitive abilities prior to treatment (to anticipate which intervention approaches may fit), including cognitively oriented procedures in the treatment itself (to engage the youth's cognitive skills as a tool in therapy or to prompt or hasten cognitive development), testing whether cognitive level or content moderates treatment outcome, assessing whether the cognitive skills or concepts stressed in therapy were actually acquired by the young clients, and assessing whether cognitive changes were related to symptom reduction or improved functioning. We now consider the extent to which such elements are evident in the literature.

Cognition in the treatment studies. In our collection of 114 adolescent treatment studies, about half ($n = 58$, 50.9%) reported addressing cognition in their treatment protocol. These were primarily studies that used cognitive-behavioral therapies to address deficient problem-solving skills or maladaptive cognitions. Only 29 (25.4%) of the studies actually assessed any aspect of cognition, and only 10 (8.8%) tested any connection between cognition and change in the target problem. Five of these studies involved treatment of externalizing problems. Guerra and Slaby (1990) and K. A. Larson and Gerber (1987) found that improvements in problem-solving skills were related to decreases in delinquent behavior. Arbuthnot and Gordon (1986) used discussion of ethical dilemmas to promote advances in level of moral judgment (in the manner of Kohlberg, 1963), and they found that improvement in moral reasoning was related to decreases in delinquent behavior. In contrast, Leeman et al. (1993) found moral reasoning level to be unrelated to delinquent behaviors posttreatment. And, although Figurelli, Hartman, and Kowalski (1994) succeeded in making adolescents' locus of control more internally oriented, they found this change to be unrelated to posttreatment substance use.

Five other tests of the cognition-outcome connection involved treatment of internalizing conditions. Brent and colleagues (1998, following up Brent et al., 1997) found that pretreatment levels of hopelessness and cognitive distortion predicted failure to recover from depression by the end of posttreatment. Sud and Sharma (1990) compared outcomes of test anxiety treatment in high-versus low-ability youth and found no differences. Treadwell and Kendall (1996) found that decreases in negative self-statements were related to improvement in youngsters treated for anxiety disorders. However, when Kendall et al. (1997) assessed anxiety levels after the cognitive phase of their cognitive-behavioral treatment, they found no effect, raising a question as to whether the cognitive portion or later exposure to feared objects and situations was more central to success.

Because cognitive-behavioral treatment figures so significantly in this section, we should note that the kinds of cognition often addressed in this treatment approach (e.g., anxious self-talk, "if-then" consequential thinking, abstract schemas that guide social action and interpretation of events) do not map perfectly onto those most often studied by cognitive development researchers (e.g., stages of moral judgment, patterns of information processing). To the extent that therapy focuses on "abstraction, consequential thinking, and hypothetical reasoning" (Holmbeck et al., 2000, p. 348), however, it does appear to engage cognition in a manner relevant to adolescent development, though not necessarily in a

way that distinguishes adolescents from adults. Perhaps the less-than-complete overlap between cognition in therapy and cognition in developmental research carries implications for a useful broadening of both enterprises.

Social Development and Adolescent Treatment

Developmental change within the social domain is a defining feature of adolescence. Teens are embedded within multiple contexts—peer group, family, school, workplace, and so forth—with each touching issues of ethnic and gender identity that can become especially vital in adolescence (see, e.g., Cauce & Gonzales, 1993; Cauce et al., 1996). The nature and impact of relationships in each context shifts throughout the second decade of life, with real consequences for development, competence, risk, dysfunction, and intervention (Bronfenbrenner, 1979; Masten, Best, & Garnezy, 1990; Holmbeck et al., 2000; Shirk, 1999). The character of these relationships may moderate treatment outcome, with some facilitating (see, e.g., Alexander & Parsons, 1973) and some undermining (see, e.g., Dishion, McCord, & Poulin, 1999) treatment gains. And treatments that address social environments and relationships may have greater potency than treatments focused on the teen alone, at least for certain clusters of problems (see, e.g., Henggeler et al., 1998).

Peer relationships. Peers form a vital layer of the adolescent's social environment, and peer problems are especially common among clinically referred teens. These facts highlight the need to address interpersonal skills and relationships in adolescent treatments (La Greca & Prinstein, 1999; Peterson & Tremblay, 1999; Selman & Hickey Schultz, 1988). Problems in peer relations bode ill for continuing emotional and adjustment problems in adulthood, whereas positive peer relations can be a strong protective factor (Holmbeck et al., 2000; La Greca & Prinstein, 1999). Developmentally based interventions can help teens build closer peer relationships by facilitating development of mature social-cognitive processes and by addressing skills deficits in communication, perspective taking, empathy, and social judgment (Durlak & McGlinchey, 1999; Selman & Hickey Schultz, 1988). Of course, close peer relations can also exacerbate problems, as when teens affiliate with a deviant group that exerts pressure to engage in antisocial behavior (e.g., Dishion, Andrews, & Crosby, 1995; La Greca & Prinstein, 1999; Patterson & Dishion, 1985). Indeed, group-based interventions that increase contact among deviant adolescents may have not just null effects but harmful effects (see Dishion & Andrews, 1995; Dishion et al., 1999; Thornberry & Krohn, 1997). We consider now the extent to which peer relationships, considered as assets or liabilities, have entered into adolescent treatment research.

Peer relationships in the treatment studies. We found that 43 (37.7%) of the studies addressed peer relations within the treatment protocol. Only 17 studies (14.9%) actually included assessment of peer relations. Six studies investigated a link between treatment outcome and peer social skills (4 studies) or peer relations (2 studies). As an example, Kazdin, Bass, Siegel, and Thomas (1989) found that reductions in conduct problems by youngsters trained in problem-solving skills were related to increases in social competence. Similarly, Leeman et al. (1993) targeted social skills in treating delinquents and found an association between improved social skills and decreased delinquent

acts, and Guerra and Slaby (1990) found that improved social problem solving was related to decreases in aggression. But when Spence and Marzillier (1981) taught social skills to delinquents, they did not find a relationship between improved social skills and delinquent behavior. Two studies investigated peer relationships and outcomes of multisystemic therapy. Henggeler, Melton, and Smith (1992) found that development of positive, emotional bonds with peers predicted reduced arrest rates, and Huey, Henggeler, Brondino, and Pickrel (2000), using true mediational analyses (see Holmbeck, 1997, in press), found that decreased affiliation with delinquent peers mediated reductions in delinquent behavior.

Family relationships. Developmental research has shown rather clearly (as if parents of teenagers needed to be told) that (a) bickering and conflict between teens and their parents increase in the early adolescent years (for findings and varied interpretations, see Holmbeck, 1996; Laursen, 1995; Smetana, Yau, & Hanson, 1991; Steinberg, 1988), (b) this increase coincides with decreases in reported closeness and time adolescents and parents spend together (R. Larson & Richards, 1991), and (c) the contention, conflict, and drifting apart take a toll, especially on the parents' adjustment and mental health (Silverberg & Steinberg, 1990). The good news is that all this disruption in the early adolescent years (a) tends to focus on mundane matters rather than basic values, (b) is rarely intense enough to disrupt the deep and enduring connection between parent and child, and (c) is typically followed by development of a less volatile, more cooperative relationship (Holmbeck et al., 2000; Steinberg, 1990).

Throughout this inverted U of the evolving adolescent-parent connection, according to dozens of studies (see Steinberg, 2001; Steinberg & Morris, 2001), the adolescent's psychological and social adjustment, and even school performance, are enhanced by authoritative parenting (Baumrind, 1978), which includes consistently enforced guidelines and limits together with warmth and psychological autonomy granting (Steinberg, 1990; Weisz, 1980). Recent work by Gray and Steinberg (1999) suggested that firmness in enforcing limits is most important as a deterrent against problem behavior such as substance use and delinquency and that warmth and autonomy granting help to protect against such internalizing problems as anxiety and depression.

The intensity of the parent-child connection in adolescence, the fact that parents and teens are so often together, and the fact that the parental role may require a complicated balancing act (firm control plus warmth and autonomy granting) suggest that many efforts to treat teenaged clients may need to encompass parents in some fashion. Moreover, therapy that fails to include parents may miss an opportunity to enlist parents to support the process and reinforce treatment gains. Finally, developmentally informed therapists can use the opportunity to help parents adopt an appropriate perspective on their teenagers' behavior. For example, an informed therapist could help parents recognize that very serious parent-child problems are not normal, even in adolescence, and that they do indeed warrant attention (Kendall & Holmbeck, 1991).

Deciding how, or even whether, to involve parents can be a complex task, requiring attention to parent characteristics (some forms of parent pathology and style may make involvement useless or harmful), the nature of the youth's problems (internalizing problems may require more of an informing and supporting role, externalizing problems more of a monitoring role), and the goals of treatment (e.g., involving parents intensely may not foster self-

reliance and emancipation). Moreover, as adolescents gain increased autonomy, self-control strategies and family communication and conflict negotiation skills may take on increased importance, whereas targeting parents as behavioral control agents may be less feasible and less effective (Holmbeck et al., 2000; Kazdin, 1993; Shirk, 1999).

Family relationships in the treatment studies. Our reading of the 114 adolescent treatment studies focused on how often, and how, parents and family relationships had been addressed. We found that 48 (42.1%) of the studies addressed parenting or family relationships in their treatment protocol. Of these, 34 studies (29.8%) actually assessed family functioning, and 19 (16.6%) assessed whether family functioning was related to changes in the adolescents' target problems. Here we comment on three questions addressed in some of the 19 studies.

Does it help to design treatments with parents or family included? Evidence is mixed on whether systematically including parents or family in adolescent treatment helps. In studies of depression (Brent et al., 1997), anxiety (Barrett, Dadds, & Rapee, 1996), anorexia (Robin et al., 1994), and hospitalized adolescents with multiple problems (Ro-Trock, Wellisch, & Schoolar, 1977), family treatment has produced better effects than individual youth treatment on at least some measures. But in other studies, focused on treatment of obesity (Coates et al., 1982; Israel et al., 1985), delinquency (Davidson, Redner, Blakely, Mitchell, & Emshoff, 1987), and depression (Clarke, Rohde, Lewinsohn, Hops, & Seeley, 1999; Lewinsohn, Clarke, Hops, & Andrews, 1990; Rohde, Lewinsohn, & Seeley, 1994b), treating adolescents alone has worked about as well as adding parents or entire families to the mix.

Does parent involvement in adolescent treatment relate to outcomes? For teen treatments that are not designed to include parents or family, one might ask whether outcomes improve when parents or family are involved in some way (e.g., attending therapist briefings, helping the teen with therapy homework). This has been found to be true in treatment for school behavior problems (Bien & Bry, 1980), anxiety disorders (Kendall, 1994; Kendall et al., 1997, before Bonferroni correction), and obesity (Lansky & Vance, 1983); we did not find studies showing otherwise.

What other parent or family factors have been linked to treatment outcome? Findings of other studies have hinted at the broad range of parent and family variables that may be related to adolescent outcomes. Treatment-related decreases in measures of externalizing adolescents' problem behavior have been associated with increased supportiveness and verbal activity in observed mother–father interactions (Mann, Borduin, Henggeler, & Blaske, 1990), with improved family communication (measured by silences, interruptions, and talk-time equality in family interactions; Alexander & Parsons, 1973), and with parent and adolescent report of increased family cohesion (S. J. Huey et al., 2000). Two studies have linked parent depression to adolescent treatment outcome. Kazdin et al. (1989) found that decreases in parent depression were associated with decreases in parent-reported child behavior problems. And in Brent et al. (1998), maternal depression was inversely related to improvement in adolescents who were treated for depression.

School functioning and relationships. A hefty chunk of the adolescent's social life is based in school, which becomes a laboratory for the development of not only academic competence but

also social skills, values, and personal coping resources (Entwisle, 1990; Trickett & Schmid, 1993). Because so much developmental action takes place in the school, and because school can be a source of threat and stress in adolescence (see, e.g., Eccles et al., 1993; Simmons & Blyth, 1987), therapeutic interventions that ignore the school context risk overlooking vital developmental events. Moreover, school may be the context in which skills learned in therapy are practiced; thus, involving school personnel may enhance prospects for success and generate feedback to parents and therapist on how well the adolescent in treatment is faring. To what extent have studies testing adolescent treatments involved the schools? We sought to find out.

Schools and the treatment studies. Some 22 (19.2%) of our 114 studies incorporated the school context in some manner. Most often, school personnel helped to deliver interventions (e.g., Bien & Bry, 1980; De Fries, Jenkins, & Williams, 1964; Kahn, Kehle, Jenson, & Clark, 1990; Lowenstein, 1982; Marlowe, Madsen, Bowen, Reardon, & Logue, 1978) or provided feedback on the treated youngsters' behavior at school (e.g., Bank, Marlowe, Reid, Patterson, & Weinrott, 1991; Brown, Wynne, & Medenis, 1985; Chamberlain & Reid, 1991, 1998; Henggeler et al., 1992). Others involved schools by teaching coping skills that teens could use in stressful school situations, such as moral reasoning for dilemmas they might face (e.g., Arbuthnot & Gordon, 1986), problem-solving skills for difficulties with peers and teachers (e.g., Kazdin et al., 1989), or strategies for dealing with authority conflict (e.g., Spence & Marzillier, 1981).

There were 29 studies (25.6%) that assessed some aspect of school relationships or adolescent functioning at school, most often behavior problems, detentions, or suspensions (15 studies); grades or teacher ratings of academic performance (14 studies); or attendance (6 studies). No studies examined the relation between treatment outcome and the school factors that were measured.

Other social contexts. The complexity of adolescent life is reflected in the range of other contexts—beyond peers, family, and school—in which teens are embedded. More than 80% of all U.S. high school students work before they graduate (Steinberg, 1999), and many adolescents have significant interaction with their neighborhood, the social service system, the mental health system, and the juvenile justice system (see Henggeler et al., 1998). To what extent are such additional environments reflected in adolescent treatment research?

Other social contexts in the treatment studies. We found only 2 studies (1.8%) that measured some aspect of a social context other than peers, family, or school, but 11 studies (9.6%) included other contexts in their treatment protocol. The most common context was work, with some studies providing skills training designed to improve employability (e.g., Massimo & Shore, 1963; Spence & Marzillier, 1981) and others using information from work settings as feedback on the adolescents' progress in treatment (e.g., Chamberlain & Reid, 1991; Henggeler, Pickrel, & Brondino, 1999). Other studies included a focus on courts and police (e.g., Bank et al., 1991) and community agencies (e.g., DeFries et al., 1964). The most comprehensive of the environmental interventions is multisystemic therapy; Henggeler and colleagues (1998) reported that they regularly engage multiple systems (e.g., youth's neighbors, employers, social workers, probation officers) and conduct intervention in the community (e.g., youth's neighborhoods, parents or youth's workplaces) in their

treatments for substance-abusing adolescents (Henggeler et al., 1991; Henggeler, Pickrel, & Brandino, 1999) and delinquent adolescents (Borduin et al., 1995; Henggeler et al., 1992). Next steps for research involving these other contexts should include tests of whether the contextual factors moderate treatment effects and whether context-related changes (e.g., job success) mediate treatment-related improvement.

State of the Evidence

The evidence base on adolescent treatment warrants a mixed review. Some of the most common and distressing problems and disorders of adolescence are addressed, but coverage is uneven, thinner in some cases than high prevalence (e.g., depression) and high risk (e.g., eating disorders, suicidal thoughts and behavior) warrant. There is substantial representation of psychological factors relevant to development in adolescence, moderate representation of social factors, and rather modest representation of biological factors; across all three categories a truly developmental focus is rare. Here we focus on selected limitations and strengths of the evidence.

Some Limitations of the Evidence

We found three disappointing trends in relation to a developmental perspective: (a) Introductions to the treatment studies rarely cited developmental theory or findings as a basis for any predictions; (b) method sections rarely cited developmental research or theory as a basis for the treatment protocols, and most included few variables of clear developmental significance (e.g., status on any biodevelopmental variable, cognitive skills or developmental level); and (c) discussion sections rarely revealed any attempt to understand findings in relation to the developmental literature or developmental characteristics of the sample.

The relative inattention to biological development was striking given the salience of this dimension in adolescence and the growing evidence of its relevance to psychopathology (see our earlier discussion). Issues of pubertal status and timing were almost completely absent from the literature, as if they were not relevant to adolescent functioning or response to treatment. Further, we found only a single study comparing a psychosocial treatment with medication, despite the high and increasing rate of—and limited empirical support for—prescriptions for psychotropics for teenagers in the real world of everyday mental health care.

Speaking of the real world, we must also note that few of the 114 studies were strong in ecological validity. Nearly all involved recruited (rather than clinically referred) youth, treated by research-employed therapists (rather than practicing clinicians) in clinical research settings (rather than community-based, service-oriented programs and clinics). Few of the treatments tested were designed to address, or were tested with, the levels of comorbidity that tend to be seen in typical clinical practice. As a consequence of these limitations, our knowledge base on adolescent care offers few treatments that have been shown effective with precisely the kinds of youth typically referred for treatment, in the kinds of real-world conditions under which such youth are treated. This gap (discussed in Weisz, Donenberg, Han, & Weiss, 1995; Weisz & Hawley, 1998; Weisz & Jensen, 1999) needs attention in future

treatment research, and at least two proposals have been advanced for spanning the gap (Schoenwald, 1999; Weisz, 2000).

The literature to date has not generated a clear picture of the effective range of adolescent treatments. Some studies assessed outcome in relation to one or more potential developmental moderators, but 72.8% failed to do so. Age is a particularly interesting case in point. Although all the studies reported sample ages (or grade in school), and many treatments were applied across very wide age ranges (up to a 10-year spread), only 6.1% of the studies assessed the relation between age and outcome. Certainly, age is only a rough summary variable, a stand-in for multiple diverse developmental factors, each of which deserves attention in its own right. But age is nonetheless a variable that virtually all researchers have at their fingertips, and age effects can have genuine heuristic value, stimulating hypotheses regarding developmental processes related to treatment response. Limited attention to age and other potential moderators means that we still know relatively little, after 114 studies, about developmental boundaries within which our adolescent treatments work and outside of which they do not.

The problem is even more striking in regard to tests of mediation. Although several study authors implied that their treatment would have an effect on the target problem through some other specified variable (e.g., that treatment would lead to decreased aggression by improving social skills), we found only 2 studies in the collection of 114 (i.e., S. J. Huey et al., 2000; Treadwell & Kendall, 1996) that used the steps described by Baron and Kenny (1986) and Holmbeck (1997, in press) for a fair test of mediation. (But see also a study, too recent to fit our search time frame, in which Eddy & Chamberlain, 2000, used the full mediational approach to show that family management skills and deviant peer associations mediated the effects of a behaviorally oriented treatment foster care program on adolescent antisocial behavior.) Failure of most studies to rigorously test for mediation limits the field in a very significant way. As Kazdin and colleagues (Kazdin, 2000; Kazdin & Weisz, 1998) have noted, simply testing treatment after treatment for disorder after disorder may leave us with a very large number of treatments and a very limited understanding of how they actually work. To understand the “why” and “how” of treatment effects will require that we use treatment research to actually test models of change. The present review suggests that we are far from such an understanding of adolescent treatments.

Finally, we note that the outcomes assessed in most adolescent treatment research have been primarily problems and diagnoses. This is reasonable in that problems and diagnoses typically stimulate treatment in the first place. But for adolescents on the path to emerging adulthood, it would be useful to know whether treatment can have broader or deeper effects (see Hoagwood, Jensen, Petti, & Burns, 1996). Does it stimulate better adaptation to school, healthier or more gratifying social connections, or more profound self-awareness, identity formation, or planning for the future? Improving quality of life in these ways is not required of treatments, of course, but assessing such possibilities could enrich our picture of the benefits of treatment for adolescents.

Strengths of the Evidence

Two aspects of the evidence give reason for optimism about adolescent treatment. First, the treatments that have been tested with adolescents do appear efficacious in general. Broad-based

meta-analyses that have separated studies with adolescents from those with children (Weisz et al., 1987, 1995) have found effects with adolescent samples in the medium-to-large range. Further, 14 of the 25 treatments identified by a specialty task force (Lonigan et al., 1998) as empirically supported treatments for youth have research support based on samples that included at least some adolescents. These treatments address some of the most prevalent and most distressing clinical conditions of adolescence, including depression, anxiety disorders, ADHD, and conduct problems and disorder (e.g., Henggeler et al., 1992). The list includes multisystemic therapy (Henggeler et al., 1998), an approach designed for seriously antisocial youth that uses tailored interventions targeting youths' natural environments and is well supported in outcome research.

Another encouraging result of our review was the trajectory it revealed. When we compared adolescent treatment studies published before 1985 with those published after 1985, we found a marked increase in attention to developmental issues. This trend may reflect, in part, the impact of developmental psychopathology, a discipline arguably initiated by Achenbach's (1974, 1982) influential text and nurtured by such ongoing publications as the journal *Development and Psychopathology* and the yearly volumes of the *Rochester Symposium on Developmental Psychopathology* (e.g., Cicchetti & Toth, 1999). We are optimistic that research-tested treatments for adolescents will grow increasingly developmental in the years ahead.

A Framework for Developmentally Oriented Treatment Research

But what might such developmentally oriented treatments consist of? How should developmental principles and research findings be used in the design and construction of treatments? The question is easier to answer in the abstract than with concrete details. The abstract conception that guides our thinking is shown in Figure 2. The figure depicts a developmental model of psychopathology (top) and treatment (bottom). Building on the widely endorsed biopsychosocial model of adolescent development, we suggest that individuals exposed to a healthy natural dose of appropriate biological, psychological, and social nutrients (with the healthy natural dose represented by the stream) will tend to fall within a healthy range of development (as represented by the tall plants). Those who do not receive a healthy dose on any or all of the three dimensions (represented by the short plants far from the stream) are at increased risk of dysfunction. Examples of unhealthy dose could include an atypically accelerated pubertal pace or deviant peers, both increasing the risk of delinquent behavior, and a pattern of negative schemas and cognitions, increasing the risk of depression.

Treatment, represented in the bottom portion of the figure by the supplemental irrigation, is construed as bringing ameliorative inputs—biological, psychological, or social—to bear to enhance the development of individuals with various forms of dysfunction. Interventions might rely on a single dimension (e.g., biology, as in antidepressant medication) or might combine dimensions, as in an approach that involves both psychotherapy with an early-developing teen (including discussion of pubertal changes and their meaning, and discussion of older peer influences and how to think about and respond to them)

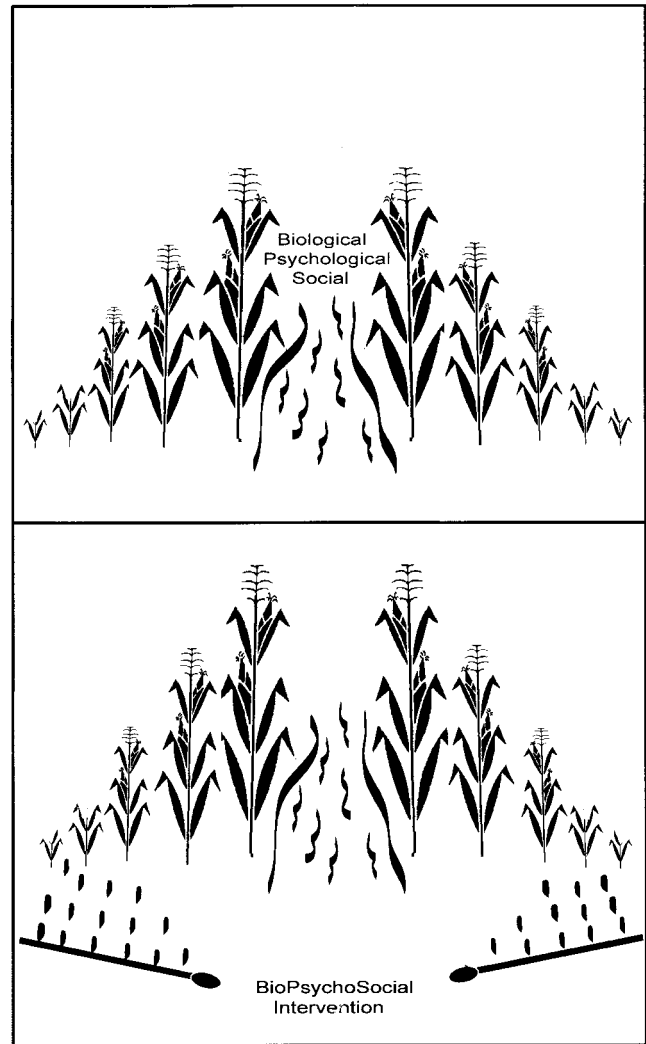


Figure 2. A developmental model of psychopathology is shown in the top panel, with biopsychosocial nutrients (represented by the stream in the middle) being delivered unequally to individuals (represented by the corn). Treatment (represented by the supplemental irrigation and water drops) is shown in the bottom panel.

and behavioral parent training focused on rule negotiation, limit setting, and peer monitoring. Current models of treatment (e.g., behavioral, cognitive, family systems, psychodynamic, psychopharmacologic) may nudge treatment planners in the direction of only one dimension. In some cases, such unidimensional treatment may be quite appropriate, but in many cases intervention strength may be magnified to the extent that multiple dimensions are encompassed in treatment.

Within this general framework, developmental findings may inform treatment development and treatment implementation with adolescents in several ways, including (a) suggesting hypotheses about biological, psychological, and social developmental processes that contributed to, and may be sustaining, the target problems and (b) suggesting ways of addressing biological, psychological, and social processes to ameliorate the problems. When we

move from these abstractions to concrete details and individual cases, a bit of a dilemma arises.

How Developmental Research Can and Cannot Be Used in Psychotherapy

The dilemma surfaces when we consider the nature of developmental research vis-à-vis the nature of treatment. Developmental findings are essentially group trends, each with considerable variability around a mean, whereas psychotherapy is done with individuals (sometimes in small groups) who may or may not replicate any particular developmental trend. Consider, for example, an early-maturing, postpubertal girl who goes to a coed school and is interested in dating but who is also closely connected to her church youth group, has high moral standards for herself, and does not smoke, drink, or have sex. For this girl, the developmental findings on multiple risks associated with early maturation in girls are not likely to be relevant to therapy.

Even in cases where developmental findings do appear relevant, therapy may not be much affected. Take, for example, an early-maturing girl who engages in all the high-risk behaviors that developmental findings associate with early puberty. Any responsible therapist who knows about the risky behaviors will certainly address them in treatment, regardless of whether the therapist knows of relevant developmental findings. So, in this case, too, developmental findings may not be needed to shape or focus the therapy, although knowledge of developmental trajectories might well help inform case conceptualization and appraisal of risks.

Similar reasoning could be applied to developmental findings on various competencies that appear relevant to therapy. Findings suggest that movement from childhood into adolescence brings major gains in recursive reasoning. But this is a group trend; it does not mean that all adolescent clients can do the “thinking about my own thinking” that is needed to identify depressive cognitive errors or that therapists should avoid using such cognition discovery procedures with all preadolescents. Dispersion of recursive reasoning skill around a central tendency at any developmental level means that therapists must gauge each youth’s capacities individually before deciding whether to, say, use rational emotive therapy aimed at identifying flawed assumptions and reasoning. Therefore, although developmental findings can certainly highlight competencies that influence what youngsters can do in therapy, the findings may not serve to guide a therapist’s decisions about what to do with a specific young client.

Can developmental research guide assessment of adolescent capacities? Perhaps, but if the goal is to assess whether a client will respond well to a particular treatment procedure, it may be more efficient to simply try the procedure and observe the client’s response. That response certainly might be better understood by a therapist who is familiar with normative cognitive development than by one who is not, but a question remains as to how useful developmental findings and developmentally based measures are apt to be to the individual therapist in planning and shaping treatment for an individual adolescent.

Although developmental research may not tell a therapist what specific issues to address or how to address them in a specific case, and it may not provide assessment methods that are more efficient than within-therapy tryouts, we see at least three ways the developmental literature can guide and inform the process of treatment.

Alerting. Developmental findings may serve the critically important function of alerting therapists to issues for which they should be vigilant. Findings on developmental milestones (e.g., Selman, 1980) may be particularly useful in this regard. Because many adolescents will not spontaneously volunteer all pertinent information, if a therapist does not think to assess for a particularly important area of functioning, problems in that area may never come to light—to the detriment of the treatment process. Good therapists need to be good detectives, an assignment facilitated by a developmentally informed awareness of risk factors in adolescence: biological (e.g., early maturation in girls, a family history of bipolar disorder in depressed adolescents), psychological (e.g., a pattern of negatively biased cognitions and self-deprecating or hopeless schemas), and social–environmental (e.g., highly conflictual relationships with parents, affiliation with deviant peers, authority conflicts at school).

Weighing and prioritizing. Developmental findings may also help therapists place various adolescent concerns and problems in an appropriate perspective and determine which should have priority for therapeutic attention. Working with a physically mature 13-year-old boy whose bickering with parents has recently escalated and who is gravitating toward older peers, the developmentally informed therapist will recognize that increased arguing with parents is normative for early adolescents (if not severe; see Steinberg, 1990) and likely to abate over time without intervention (though parent work may be helpful), whereas close association with older peers is a significant risk factor for adolescent boys (Silbereisen et al., 1989; Williams & Dunlop, 1999), warranting close attention in treatment.

Selecting candidate interventions. Developmental findings may also suggest the means by which problems should be addressed with adolescents. As an example, findings on the benefits of parenting teens by blending firmness and autonomy granting (see Steinberg, 2001) suggest that behavior management training for parents of externalizing teens may need to be different than for parents of young children. As Shirk (1999) suggested, behavioral training for parents of adolescents “must be reconceptualized in terms of mutual rather than unilateral interventions” (p. 64). Instead of parents simply issuing commands and enforcing them with contingencies (as occurs with children), parents of teens, together with their teens, may need to learn negotiation skills so as to balance parental authority with a degree of adolescent autonomy (see also Holmbeck et al., 2000). In individual treatment, therapists may find their adolescent clients most engaged by methods that exercise their emerging capacities for abstract, consequential, and recursive thinking (e.g., finding errors in their own ways of thinking about experiences). Massive individual differences among adolescents mean there are no guarantees that any specific method will work well with any specific youth, but developmental knowledge can help therapists identify high-probability candidates.

Designing Treatment Protocols: The “Toolbox” Concept

Thus far, we have focused on generic issues related to the treatment of individual adolescents. But what about the kind of therapy carried out in the research reviewed for this article, the kind that is best supported by the empirical evidence—that is, therapy guided by manualized protocols? The development and use of treatment protocols is somewhat isomorphic with develop-

mental research, in that both are oriented toward group trends. Manuals in current use with adolescents range from very structured documents detailing the contents of each session (e.g., Clarke, Lewinsohn, & Hops, 1990a, 1990b) to lists of general principles with examples of how to apply each (e.g., Henggeler et al., 1998). Developmental findings may be relevant to protocols across this spectrum—for example, with findings on adolescent social relationships and stressors used to inform specific procedures for social skills training (see Clarke et al., 1990a, 1990b) and findings on adolescent cognitive development used to guide applications of Multisystemic Therapy Principle 6: “Interventions are developmentally appropriate and fit the developmental needs of the youth” (Henggeler et al., 1998, p. 23). Manual developers generally aim for the broad middle of their target group, assuming that not all parts of the manual will fit all who are treated with it.

The “toolbox” concept used in our own treatment program for youth depression (Weisz et al., 1999; Weisz, Thurber, Sweeney, Proffitt, & LeGagnoux, 1997) is relevant here. We begin with a series of sessions providing initial exposure to nine specific coping skills, suggested by research, for coping with depression. Developmental literature and other research suggests that there will be individual differences at different maturity levels in the usefulness of the various skills. Thus, we now view the coping skills not as essential for all to master but rather as tools in a toolbox, available when needed but differing in their relative usefulness to different individuals at different developmental levels and in different situations. As the coping skills are covered in the first treatment phase, the therapist and individual youth identify a few that are a particularly good fit; in the last phase of therapy, these few skills are the exclusive focus, with mastery encouraged through in-session role-plays, in vivo trials outside the therapy room, and take-home practice assignments. In general, we find some developmental variations that are consistent with research findings. For example, the coping skill of identifying and altering depressive cognitions tends to engage midadolescents more than children and early adolescents. But the skill does work well for some early adolescents and fails to compute for some 14-year-olds. The function of developmental research, relative to this treatment and potentially to others, is not to tell us what specific contents will work in a specific case but rather to suggest what options should be in the toolbox for the therapist and youth to try.

How a Developmental Perspective Might Alter Current Treatments

Creating, refining, and testing treatments is hard work. The respectable effects generated among adolescents by current treatments highlight the success of those who have done this work to date, and it is certainly beyond the scope of this article to propose specific changes in specific current treatments. However, our review does have some general implications for how an expanded developmental perspective might alter the array of current adolescent treatments. At the most basic level, one might see less adapting of interventions originally designed for other age groups and more reliance on the study of adolescent development, risk, dysfunction, and resilience as the primary basis for the design of adolescent treatments. One might also see changes in the array of conditions and problems addressed, with increased emphasis on (a) those that are currently understudied relative to their adolescent

prevalence (e.g., depression, substance use disorders, panic disorder), (b) those that are extremely risky in adolescence (e.g., eating disorders), (c) those for which we lack effective treatments (e.g., suicidal behavior), and (d) clusters of comorbidity that are a fact of life in adolescence. One might expect more attention to the biological (e.g., pubertal status and timing) and social (e.g., peer and family relationships) factors that are so central to adolescent life, with both dimensions increasingly featured in the content of treatment, the assessment of process and outcome, and efforts to identify moderators and mediators of change. It is also possible that the remarkable developmental variability seen in most adolescent groups would dictate increased flexibility in treatment structure and content, with considerable up-front information gathering about each individual client used to alert therapists to developmentally significant issues and risks and guide them in selecting appropriate goals, concepts, skills, and intervention methods from an array of options covered in the treatment protocol. Indeed, it is possible that the most developmentally informed treatment manuals will look more like sets of modules, with all components designed to address the target condition(s) being treated, but with flow charts helping to fit goals and procedures to the distinctive developmental strengths, vulnerabilities, and style of the individual adolescent being treated.

Concluding Thoughts

In this article, we have offered a combination of good and bad news. The good news includes the fact that mean effects of adolescent treatments are respectable and that a number of specific interventions sometimes used with adolescents meet formal criteria (Lonigan et al., 1998) as empirically supported treatments. The bad news includes the fact that only one of those specific treatments was originally developed for adolescents and that coverage of adolescent problems, disorders, and key themes (biological, psychological, and social) in the treatment literature is uneven and out of proportion to the need suggested by prevalence and salience data. We have offered a general model for the interplay of biological, psychological, and social factors in the development of dysfunction and interventions, and we have discussed ways the developmental literature can (and probably cannot) inform treatment and treatment research. There are now signs of increasingly developmental thinking in clinical research with adolescents, and our hope is that this trend will lead to increasingly effective treatments for referred teens in practice settings and an enriched understanding of when, how, and why the treatments work.

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